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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,741	01/17/2002	Yoshinobu Ono	3885-0103P	2546

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EXAMINER

MULPURI, SAVITRI

ART UNIT PAPER NUMBER

2812

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
10/046,741

Applicant(s)  
Ono et al

Examiner  
Savitri Mulpuri

Art Unit  
2812



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jun 19, 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in combination in Narui.

Rejection is maintained same as in paper no. 8 mailed on 12/20/03.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Narui.

Rejection is maintained same as in paper no. 8 mailed on 12/20/03.

Applicant's arguments filed ON 6/19/03 have been fully considered but they are not persuasive. Applicant argues that Admitted prior art in page 1-2 of the instant specification fails disclose or suggest a fabrication step in which second layer of higher Al content is grown on first layer of lower Al content at slower growth rate than that used to grow the first layer, as in the present invention. However, secondary reference Narui teaches that AlGaAs with higher Al content is grown at a low growth rate of 0.16 nm/sec with reduced roughness and reduced defects. Modified invention of Admitted prior art as modified by the teaching Narui results smooth surface with reduced defects.

Applicant argues that Narui is directed to inhibiting the occurrence of defects or surface roughness and addresses defects which occur when AlGaAs layer is grown on stripe-like ridges formed on AlGaAs, when the ridges are narrow, limited region and the existence of a facet other

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than the (100) surface is essential. However such disclosure in the invention of Narui is not relevant to the recited claims.

Applicant clearly stated that the teaching of Narui suggesting to inhibit the occurrence of defects the growth rate must be made lower for the growth of AlGaAs having higher Al content setting growth rate 0.16/sec., which is exactly same as the crux of the instant claimed invention.

Applicant argues that Narui fails to disclose any difference in the growth rate of AlGaAs layers of higher or lower Al content as in the method of the present invention and fails mention any relationship anything regarding the relationship of the growth rates of these two layers having different Al content. However, Narui teaches successively growing GaAs layer on GaAs substrate; growing plurality of AlGaAs layers AlGaAs with Al content 0.45, AlGaAs with Al content 0.14, AlGaAs with Al content 0.45, AlGaAs with Al content 0.45 and AlGaAs with Al content 0.45, wherein AlGaAs greater than 0.4 is grown at lower growth rate 0.16 nm/ sec to roughness and in turn reduce the roughness (see abstract and fig. 6 and see the whole document). AlGaAs layer 1 and 2 as first set of buffer layer and AlGaAs 3-5 are second set of buffer layers, where in Al content in bottom layer of second set of buffer layers is higher than Al content in top buffer layer of first set buffer layer.

Conclusively, Narui suggests to inhibit the occurrence of defects, the growth rate must be made lower for the growth of AlGaAs having higher Al content e.g., setting growth rate 0.16/sec., which is exactly same as the crux of the instant claimed invention.

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**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Mulpuri whose telephone number is 703-305-5184. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
SAVITRI MULPURI  
PRIMARY EXAMINER

SM

9/5/03